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Finnish dependency on Russian energy – an energy security risk or a push towards more sustainable energy forms?

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‘I hereby declare that this dissertation has been composed by me and is based on my own work’.

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Abstract

Energy security has been a crucial concept in recent years, as an increasing demand for energy has resulted in many countries importing vast amounts of energy resources in order to satisfy growing demand. The purpose of this dissertation was to observe Finland and its energy dependence on Russia. Geographically, Finland sits between Europe and Russia, and in certain respects this geographical location has reflected onto Finnish politics and economics. Most definitely the location is reflected in Finnish history, as being situated between two vast empires that were simultaneously at times trying to claim the land as their own left Finland with a sense of pride in independence. These historical ties have thus left a mark on the Finnish cultural, economic and political landscape, as Finland is indeed often viewed as the corridor between Europe and Russia.

Finland lacks domestic sources of fossil fuel energy, and as a result, has to import substantial amounts of petrol, natural gas, and other energy sources, such as uranium for nuclear power. Hence, Finland has created for herself a dependency on the import sources and indeed an issue of energy security. Moreover, as a result of a lack of indigenous fossil fuels resources, Finland has come to rely on vast amounts of growing nuclear power in order to produce enough energy for rising consumption and the carbon intensive industry, a matter that creates further energy safety concerns. However, Finland's energy security is not, at the time of writing, endangered by Russian geopolitical actions of recent months. Nevertheless, the effects and extent of these geopolitical disturbances are as of yet unknown, and thus energy security must remain a priority for Finnish policymakers, as should the advancement of more sustainable forms of energy instead of nuclear and CO^2 fossil fuel formats. The goal should indeed be to increase the efficiency of energy in order to make the best out of the renewable energy sources at hand, and to stop frivolous energy consumption, instead of creating further hazardous nuclear power plants, or a reliance on an unstable country for energy imports.

TABLE OF CONTENTS

List of figures

1. INTRODUCTION

1.1. General Introduction

The concept of energy security has been at the forefront of European news in recent months, as the use of energy resources and supplies have been used as foreign policy tools by Russia. Russia, as an energy giant, has indeed used energy policy as a tool, and one that has been an especially essential characteristic of the geopolitical landscape since Putin came to power in 2000 (Smith, 2014:77; Huotari, 2011:121; Cohen, 2009:91; Fernandez, 2009:4029; Högselius, 2013:91). Energy security, according to the International Energy Agency, broadly speaking, is 'adequate, affordable and reliable supplies of energy,' and is thus seen as 'a problem of risk management' in terms of creating 'an acceptable level [of] the risks and consequences of disruptions and adverse long-term market trends.' (quoted in Esakova, 2012:40-1) This dissertation will seek to discover the ways in which European countries, with a special focus on Finland, are vulnerable due to the fact that fossil fuel imports largely originate from Russia (Urciuoli et al., 2014:57). Much of the world is facing an increasing demand for energy and hence it is progressively more important to secure chains of energy supply (Urciuoli et al., 2014:57).

The purpose of this dissertation will be to observe Finland and its energy dependence on Russia. Geographically, Finland sits between Europe and Russia, and in certain respects this geographical location has been reflected in Finnish politics and economics. Most definitely the location is reflected in Finnish history, as being located between two vast empires that were simultaneously at times trying to claim the land as their own. These historical ties have thus left a mark on the Finnish cultural, economic and political landscape, as Finland is indeed often viewed as the corridor between Europe and Russia – not an ex-Soviet country, but with closer ties than the average European

country. Some authors have even gone as far as stating that Finland lies in 'Russia's pocket,' albeit a shocking claim but one that speaks volumes of the close relationship the two countries have shared since independence in 1917 (Luukkanen, 2010:7).

Finland was chosen as the case study because of the researcher's personal interests in the Finnish-Russian relations. Having grown up in Finland in the early 1990s, the proximity and relevance of Russia was ever present, as the Eastern neighbour was going through vast transformations – ones which also influenced Finland. Furthermore, having access to various databases and other resources through libraries in Finland proved to be an advantage. Also, three interviews were carried out with experts in the field. Each interview contributed tremendously to the overall context of the dissertation, and various quotes from each interview will be used throughout the dissertation.

Through an exploration of the phenomenon and theories of energy security, Finland's history and energy relations with Russia will be inspected in order to gain an understanding of how these relations may endanger Finland's energy security. Furthermore, the focus will remain on imported energy, natural gas and renewable energies. This is due to the fact that natural gas has been the most prevalent in discussions of energy security on a general EU-level, as multiple countries import all natural gas reserves solely from Russia, including Finland. The idea of freeing Finland from Russian energy dependence through means of decreasing energy use, or diverting energy use to more sustainable forms such as biogas and others, is what reflects the secondary part of this dissertation. Indeed, while by no means a new concept, European energy security has indeed been highly publicized in recent months as even in Finland, while not the country most at risk of a collapse of natural gas imports, Russian actions and policies have been questioned by various Finnish authorities and the media.

Most of the writing on the subject will focus on a general EU versus Russia level and thus most theory found is applicable on a more general basis, and will be applied to the Finnish situation. In considering the Russian and European energy security, it can be said that in most circumstances of energy agreements between a member state and Russia, it is implied that for both sides security is a concern. Indeed, firstly, for the side of the EU member states, the security of gas supply is more important in order to avoid any disruptions supplies. Secondly, for Russia the concern is securing the demand for energy imports in order to have a stable market share in the EU despite possible geopolitical tensions (Le Cog and Paltseva, 2014:41). These two objectives, are indeed 'closely interrelated and represent the core of them mutual gas dependency between Russia and the EU.' (Le Cog and Paltseva, 2014:41).

The structure of the dissertation will be as follows; the introductory chapter will introduce the topic and the methodology being used in assessing Finland's dependence on Russian energy and energy security. Chapter Two will briefly outline the historic and present day relations between Finland and Russia, while Chapter Three will sketch out Finland's current energy situation. Chapter Four will include a discussion of the current geopolitical situation, how it has led to a further securitization of energy in terms of Russia and Ukraine and how this may all relate to Finland, while the final chapter will include a discussion of Finland's place in energy security discussion and whether Finland's position should lead to further investments in renewable energies, instead of being reliant on certain Russian energy imports, or nuclear power.

Thus, the research question of whether Finland's energy reliance on Russia is an energy risk, or whether it should be viewed as a further incentive towards energy independence and more sustainable energy forms will be attempted to be answered. This will

represent the main *problématique* of the dissertation – whether Finland should seek gas and other energy resources elsewhere, as is partially already being done, or seek further renewable resources to replace natural gas and other fossil fuels energy needs.

1.2. Research Methodology

The study design chosen for this dissertation was that of a primarily desk-based research project, with three interviews, both semi-structured and structured ones. The research was conducted from a historical and political perspective, with a focus on how those have come to influence energy relations and energy security between Europe and Russia, and more specifically Finland and Russia. Desk-based research drew on intense observations into the joint histories of both Finland and Russia, both through academic books and journal articles, newspaper articles, journalistic books, government documents, and databases based in the Helsinki University Library in Finland.

Interview participants included a number of experts in different fields, but all with certain interests in the topic of Finnish-Russian relations, and on the phenomena of energy dependence and security. The participants were indeed chosen for this very specialty and expertise, whether it be in the field of economic relations, historic relations, or security and environmental matters. The interviewees were Charly Salonius-Pasternak, Jussi Uskola, and Antto Vihma. Salonius-Pasternak is a Senior Research Fellow in The Global Security research programme at the Finnish Institute of International Affairs, and specializes in security and defence policies. Jussi Uskola is a Power Market Analyst at Fortum Oyj, a Finnish energy company that focuses on the Nordic and Baltic Countries and Russia. Finally, Antto Vihma also a Senior Research Fellow in The Global Security research programme at the Finnish Institute of

International Affairs, with special expertise in energy in external relations and global climate governance.

Interview questions were drawn up and based around the wide ranging topic area of the dissertation. Specific questions were designed with specific participants in mind, but the same set of questions was presented to each participant in order to draw various opinions on all questions (see Appendix 2). The semi-structured interview that was carried out face to face followed indeed a semi-structured procedure, as questions were asked by the researcher, but conversation was allowed to be carried out freely during the interview. Prior to the interview, the participant was presented with the Information Sheet and the Consent Form (see Appendix 1) was signed by the participant. The information gathered from the interviews will be used throughout the dissertation as quotations.

The two interviews that were carried out through emails, or virtual interviews, were all sent out with the same questions that were used during the semi-structured face to face interview in order to maintain the same focus and topics chosen for the design. The only difference between these virtual interviews, and the semi-structured interview, is that understandably there was less discussion, and they were more structured in a question and answer-arrangement. This resulted in a change in the role of the interviewer, as the environment and rules of the discussion were clearly set out alongside the questions, and a lack of visual and verbal cues allows for a less directive role for the interviewer (Turney, 2008:924; Egan, 2008:244). Seeing as the face to face interview and all email conducted interviews were fully transcribed and documented, both types had high fidelity and not a very strict structure. The data received from these interviews has been

used within the main body of the dissertation as quotations and sources, much like ones from books and journal articles, in order to enrich the arguments being made.

While a fairly straightforward research project, certain difficulties and limitations were faced in the desk-based research and the interview portion of the project. Interviewers, while a very flexible and valid form of data collection, can be prone to bias from the interviewer (Guthrie, 2010:126). However, these potential ethical issues were taken into strict consideration, and it was made sure that the questions presented to participants were not misleading, controversial or loaded.

Furthermore, seeing as the questions asked participants to express their opinions, it is possible that professional or institutional bias from their end may have influenced answers, and thus the reliability of the data, as with any other qualitative data may be questioned. The problem of not being able to 'dispassionately measure' qualitative data presents itself here, as it is vulnerable to 'varied interpretations and valuation.' (Walliman, 2006:55). Place of employment - whether it be government funded think-tanks or universities or energy companies - and political party alignment are all factors that may present biased opinions in this research project. This, however, can also be presented as a strength, as much of the discussion surrounding Finnish energy relations with Russia is carried out on strictly professional governmental platforms, so interviews with experts may provide different and informal perspectives.

2. BACKGROUND

2.1. Pre-Cold War Finland

Much of Finland's pre-Cold War history is that of being a proxy or an extension of either the Swedish or the Russian Empire, and thus Finland's history is divisible into three periods; the Swedish period, the Russian period, and the independent period (Zetterberg, 2014). For over five centuries until the year 1809, Finland was part of the Swedish Empire, with trade and international relations 'conducted under the Swedish flag.' (Mead, 1991:308) Finland, while having some national identity, was a collection of provinces without being a national entity, and was governed from Stockholm (Zetterberg, 2014). In 1809 Sweden lost Finland to the Russian empire. While not having been a national entity during the Swedish period, under Russian rule Finland became an autonomous Grand Duchy (Zetterberg, 2014). The trade history between Finland and Russia stems from this period, and the state of the Russian economy has tended to influence the Finnish economy in various ways. This is reiterated by Hjerppe, who states that the biggest drops in the history of the Finnish GDP were in 1917 and 1918, which were troubled years in Russia due to the revolutions (2010:50).

In 1906 Finland went through a parliamentary reform, through which a unicameral parliament and universal suffrage were implemented, and in December of 1917, Finland became independent as Russia was in turmoil as a result of the events of the First World War (Zetterberg, 2014; Lavery, 2006:1). Finland did, as a consequence of Second World War peace settlements, lose 'ten percent of its territory, had to resettle a tenth of its population within the revised borders, and was required to pay a massive reparations bill.' (Mead, 1991:307) Finland has, since then, been able to transform her economy to becoming a successful Nordic country with an especially high standard of living (Mead, 1991:307).

2.2. Fall of the Soviet Union and accession to the EU

Finland was the only European country that shared a border with the Soviet Union, but was not integrated into the Eastern Soviet bloc. After 1948, Finland's position in the European community gradually developed, but policies remained cautious as the country tried to remain neutral in the eyes of the Soviet Union (Heikka, 2005:91; Tiilikainen, 2006:52). Indeed, formally Finland kept to a policy of neutrality in the Cold War, but in reality, the policy pursued was one which 'first and foremost sought to appease the USSR' (Lavery, 2006:12). Salonius-Pasternak stated that many lived in the hope 'that many issues [could] be addressed at EU-Russia level, but while there is domestic criticism that Finland has given up its own Russia policy' this does not seem to be the case (2014). The ensuing trade with the Soviet Union helped Finland transform its economy and become one the world's wealthiest nations (Lavery, 2006:12). The cost of the trade with the Soviet Union was, however, Soviet influence in domestic politics, as the 'comfortable niche between East and West began to disappear' in the early 1980s (Lavery, 2006:12). After the collapse of the Soviet Union, Finland dropped its policies of pragmatic neutrality and isolationism 'almost overnight' in order to create a secure place for Finland in the bigger European society (Heikka, 2005:91). This meant security cooperation with NATO countries, and ever since Finland has remained committed to a strong secure Europe with close transatlantic relations, but without joining NATO (Heikka, 2005: 91).

Thus, as a result of the disintegration of the Soviet sphere of influence and a fear of an unstable post-Soviet Russia, Finland decided to take part in Western European political and economic integration by joining the EU in 1995 (Lavery, 2006:12). Up until the collapse of the Soviet Union, Finland has been the only industrialized market economy that was trading with the Soviet Union bilaterally and benefiting economically (Sutela,

2007:137). According to Sutela, trade between the Soviet Union and Finland 'contributed to macroeconomic and business-level stability,' due to the fact that contracts were signed on a state level, but on the Finnish side were implemented mostly by private companies, thus displaying both 'national and private interests.' (2007:138)

While there were concerns about joining the EU, there were specific benefits to the union; first, membership would improve the economy due to new markets; second, national security would be enhanced without joining a military alliance; and finally, 'many Finns saw membership in the EU as a way of leaving Moscow's political sphere of influence once and for all.' (Lavery, 2006:156) In keeping with the Nordic balance theory, Finland did not needed to join NATO during the Cold War, as stability in the region was been maintained by Norway and Denmark's NATO memberships, alongside the Finnish FCMA treaty with Russia, and a neutral Sweden in between (Heikka, 2005:93). However, the end of the Cold War did not erase Finnish reluctance to integrate militarily, and Finland remains one of the only northern European countries with conscription (Lavery, 2006:12).

In terms of the economy, the fall of the Soviet Union was traumatic for Finland, as after decades of high levels of economic growth, Finland's economy faced an economic depression of 1930s proportions and one of the causes was the loss of a crucial trading partner (Lavery, 2006:157-8; Sairinen and Lindholm, 2005:61; Järvelä et al., 2011:19). Finland has regained Russia as a trading partner in the last decade and for many years Russia has battled Sweden and Germany as Finland's main export market (Lavery, 2006:157).

2.3. Finland between East and West

Finland's place in Europe is an interesting one, and requires further clarification in order to understand why Finland may have specific aspects to consider in terms of policies concerning Russia. The 'old geopolitical cliché' of 'Finland between East and West,' while having lost most of its significance as a result of bipolarity being phased out in return for multipolarity in European relations, still holds a place in Finnish thought and history (Mead, 1991:308). The peripherality of Finland 'on the northern frontiers of settlement and on the eastern marchlands of Western Europe' is indeed significant for Finland's history and current affairs (Mead, 1991:307). This significance, however, has somewhat diminished since Finland has been able to make remarkable successes as one of the Nordic countries, and then as a member of the European Union.

However, the past does indeed sometimes seem to loom its less than attractive head, as when considering the current geopolitical events in Eastern Europe. Russia is acting as only an egotistical superpower would by enforcing its policies in various Eastern European countries, and Finland is being strict to follow EU policies, but while also maintaining bilateral relations with Russia. However, as a fully-fledged member of the Union, Finland has supported further integration into the EU, and has consistently avoided 'drifting to the periphery of the Union' by going against Union policies towards Russia (Sairinen and Lindholm, 2005:60).

President J.K. Paasikivi once stated, 'Russia might not always be a great power in the world, but it is always one for Finland.' (Lavery, 2006:157) Indeed, the term 'finlandization' has been applied to the period of time, and the way in which Russia was able to influence Finland, and according to Luukkanen, even today 'honest conversation about Russia and our relations to our eastern neighbour is still suffering due to traumas

of the period.' (2010:7) Even in terms of energy, during the Cold War as the first nuclear plants were under consideration, Finland felt compelled to look both East and West for guidance (Teräväinen et al., 2011:3435). According to Teräväinen et al., especially in terms of the Soviets to the East, the Finnish 'government felt compelled to commission two Russian light-water pressurised reactors', while two reactors were ordered from Sweden (2011:3435).

Russia has also been a positive influence on the Finnish economy as a trade partner. Flourishing trade and linked economies have characterised the Finnish-Russian relations in recent years (Smith, 2006:23). However, these successes are shadowed by Russia's growing tendency to use economic means as foreign policy tools in order to dominate (Smith, 2006:23). Indeed, on a European level, Finland can be characterized as a 'friendly pragmatist', a country that sustains a close relationship with Russia, a relationship where business interests are generally put ahead of political goals (Leonard and Popescu, 2007:2).

2.4. Economic success and exceptional path to industrialization

Finland has in the last half a century been able to create one of the world's wealthiest economies, stemming from an 'ability to export products to larger markets.' (Lavery, 2006:8) While being reliant on various imports, wood is Finland's greatest resource seeing as forestry products pioneered Finland's exports, while in recent decades electronics and information technology have taken their position as top exports as well (Lavery, 2006:9; Joas, 1997:120). The rise in technological exports is indeed what has created the competitive nature of the Finnish economy.

Finland industrialized in a way different to most other countries. The common formula for industrialization in economic history has been one of changing the energy system in use from 'renewable to non-renewable sources,' and this has indeed been seen as the 'indispensable precondition for successful industrialization.' (Kunnas and Myllyntaus, 2009:155) However, according to Kunnas and Myllyntaus, Finland was the 'odd man out' because industrialization 'was based on renewable, indigenous energy sources' which consisted of a blend of 'fuel wood, wood refuse and hydropower' due to the lack of domestic sources of fossil fuels such as coal and oil (2009:155). It was not until the 1960s that due to rising energy consumption, fossil fuel use came to surpass the use of renewable sources (Kunnas and Myllyntaus, 2009:177). Kunnas and Myllyntaus attribute the late transition on the immense wood resources, which allowed the postponing of the use of fossil fuels because firewood was cheaper than coal (2009:177-8). Thus, Finnish industrialization was based on renewable energies, which lay the foundations for current extensive renewable energy methods, as will be discussed in the next chapter.

3. FINLAND'S CURRENT ENERGY 'CAKE'

3.1. Finnish climate

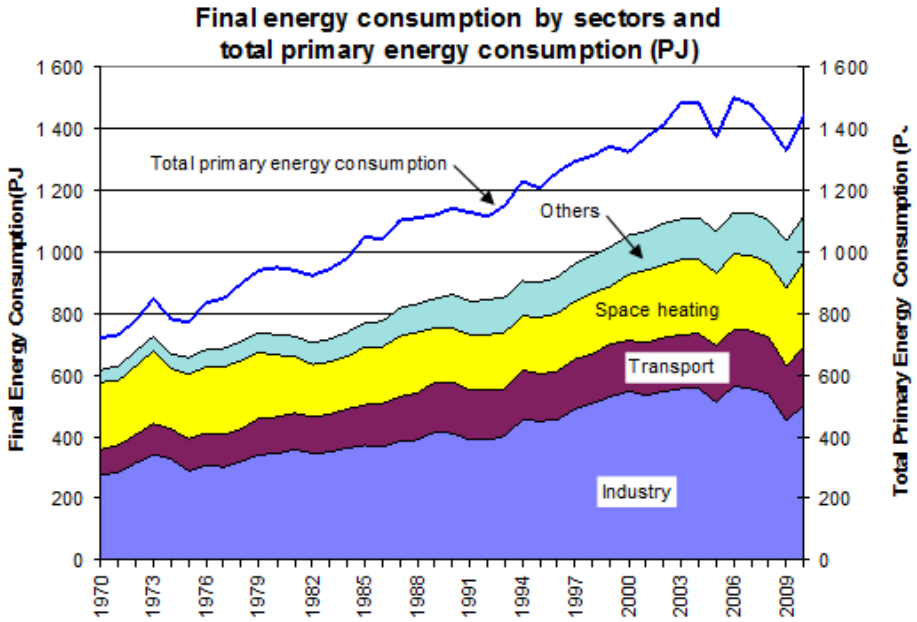
Climate and natural resources are known to have a major impact on the energy availability, energy usage and energy politics of a country, and Finland's climate presents certain issues for energy consumption. Finland is situated in the North East peripheral of Europe, with high altitudes and a very harsh climate with a constricted variety of natural resources (Mead, 1991:307) Indeed, approximately a third of the country is north of the Arctic Circle (Lavery, 2006:2). The northern location quite obviously has a significant impact on the country's climate, as winters are long, dark and cold, while summers are very warm (Lavery, 2006:2). Thus, the lack of indigenous hydrocarbon energy sources, namely fossil fuels such as oil, gas and coal, means such resources must either be imported, or alternatives for each resource must be found (IEA, 2013:9). Most bedrock in Finland outdates organic life on earth, and thus are lacking in fossil fuels necessary for energy production in modern industrial societies (Singleton, 1998:5).

3.2. Energy usage and supply

According to the International Energy Agency, Finland has one of the largest energy consumption per capita rates in the world (IEA, 2013:9). This is 89% higher than the EU 2008 average, and is mostly due to the intense need for heating during long, cold winters, carbon intensive industry, and high requirements for transportation per capita due to the low density of the population as seen in Graph 1 (IAEA, 2012). Finland's energy consumption is estimated to rise slightly within the next decades, and thus the securitization of energy sources is vitally important (Enerdata, 2014). Indeed, seeing as the economy is of a highly industrialized nature with considerable 'high-tech

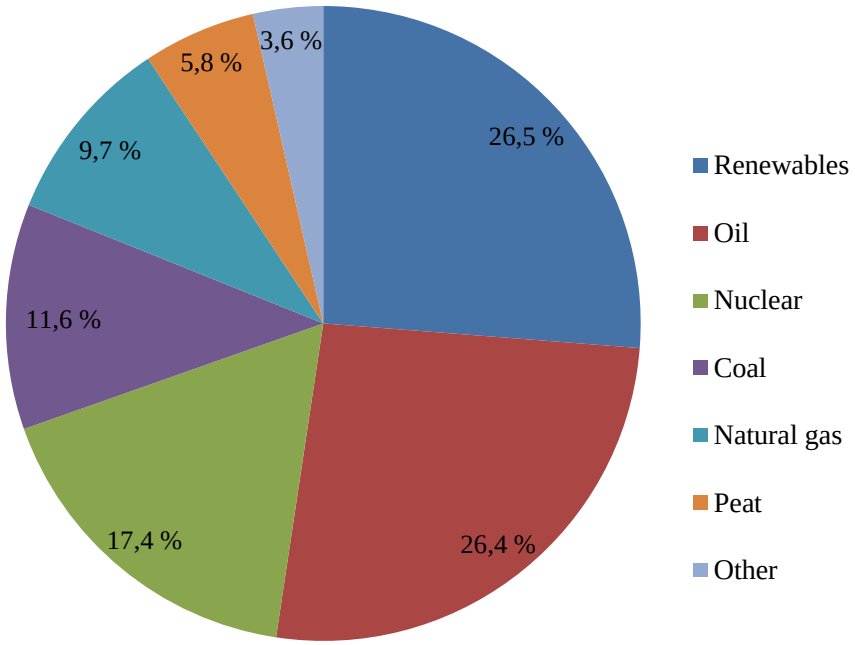
manufacturing, electronics and chemical sectors' alongside paper and forestry industry, energy security is a significant consideration (IEA, 2013:9).

Graph 3.1. Energy consumption by sectors in 2010



Graph from IAEA, 2012.

Graph 3.2. Total primary energy supply (TPES) – Finland 2013



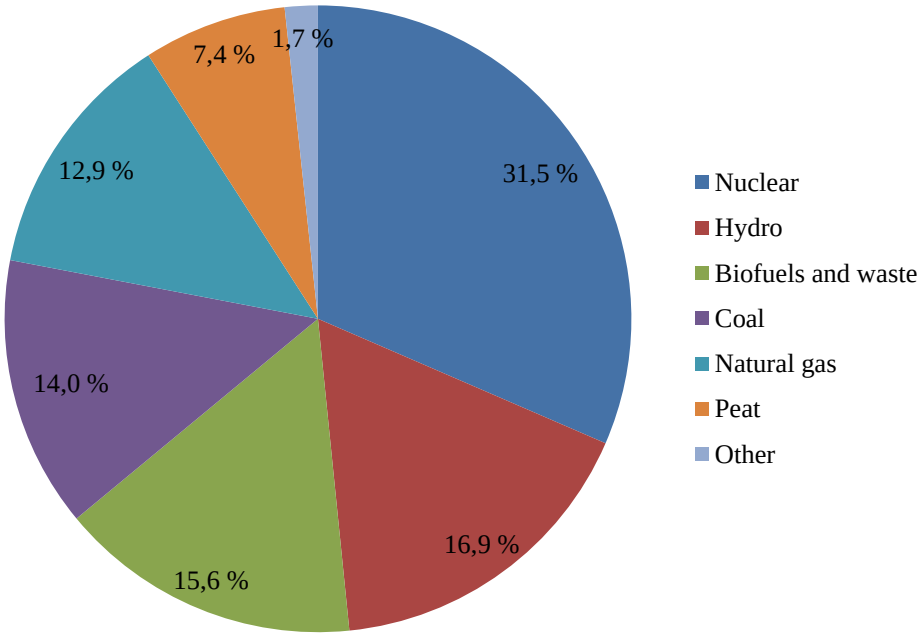
Data from International Energy Agency, 2013:15.

The total primary energy supply (TPES) of Finland in 2011 consisted of 34.7 million tonnes of oil-equivalents (Mtoe), of which 26.5% were renewables, 26.4% oil, 17.4%

nuclear, 11.6% coal, 9.7% natural gas, 5.8% peat, and 3.6 % other, with a 7.8% rise since the year 2000, as seen in Graph 2. Per capita, TPES equals to 6.5 tonnes of oil-equivalent (toe), which is indeed high compared to the IEA average of 4.6. toe (IEA, 2013:15).

From this energy supply, the electricity that is generated originates from various different sources, which are displayed below in Graph 3. Due to lack of indigenous fossil fuels, Finland relies on a lot of energy imports. According to Enerdata, Finland's energy independence in 2014 is 49.8%, meaning half of Finnish energy supplies are imported (Enerdata, 2014). Crude oil and other oil derived products make up the majority of imports, but also coal, natural gas, and uranium are imported (IAEA, 2012). In terms of electricity, the Nordic electricity market imports significant amounts – mostly from Russia. Furthermore, there is an upwards trend of electricity imports from Russia to Finland specifically (Kara, 2008:196).

Graph 3.3. Electricity generation sources



Data from International Energy Agency, 2013:15.

Finland's longer-term strategy for decarbonizing, and decreasing energy dependence on other countries, has come about in such a way that two cleaner sources, renewable energy and nuclear energy, have been prioritized in order to '[meet] national climatic objectives.' (IEA, 2013:10-11)

3.2.1. Nuclear energy

The first of the decarbonizing goals set out by the Finnish government is the further development of the already significant nuclear power stock, which has been favoured by most Finnish governments during the years as it has allowed for a diversification of the energy mix and thus enhanced energy security (IEA, 2013:11). The history of Finnish nuclear power stems back to the late 1970s and early 1980s when the first two nuclear reactors began commercial operation, one built with Swedish built reactors, and the other with Soviet originating reactors (IAEA, 2012; Kidd, 2007:200). Indeed, Finland's nuclear history relates very much to the cultural and historical nature of the country, as during the Cold War Finland maintained relations with both East and West (Nuttall, 2010:169). Nuclear power is indeed favoured by a majority of the Finnish government, and this is due to fact that the 'process of nuclear fission releases immense amounts of energy,' but also without 'many of the pollutants' of various other energy productions, such as nitrogen oxides, sulphur, or carbon (Scurlock, 2007:9)

Finland is one of the only EU member countries that has future plans to expand nuclear power plant activities (IEA, 2013:11). Indeed, after the Fukushima disaster, many European countries, such as Germany and Italy, have announced 'nuclear exit' strategies (Christie, 2012:63). If the planned power plants are completed, Finland will have seven operating nuclear plants, and the share of electricity that nuclear power produces would rise from 28%, to over 30% in 2020, and by 2025 even possibly 60% (IEA, 2013:11). Finland's nuclear stock is dependable, and run a very reliable operation

of (majoritarily) electricity production, and nuclear safety measure procedures have even been exported to Eastern European countries that are running nuclear power plants that were built using Soviet technologies (IAEA, 2012). Indeed, the majority of nuclear power is used to produce electricity, which in turn is used to heat homes and businesses (Ferguson, 2009:299). However, given that the fifth nuclear reactor will not be enough to meet future electricity consumption needs, Finland's energy resources are will, in the future, be vulnerable to energy imports (Kara et al., 2008:197-8).

However, nuclear waste issues must be addressed, and are bound to become a further issue as the topic of the construction of the further two power plants become more current. Nuclear waste storage has been largely successful in Finland (Macfarlane, 2011:32). The Finnish state has set up a Nuclear Waste Management Fund, to which energy companies make annual payments, which then, while operating under the Ministry of Employment and the Economy, covers all measures having to do with nuclear waste – namely treatment, storage, disposal and plant decommissioning (IAEA, 2012). Furthermore, according to Nuttall, a feeling of trust and transparency between local communities, the nuclear sector, and also policy makers, is what has the Finnish nuclear sector so successful, and also so accepted amongst Finnish society (2007:230).

3.2.2. Renewable Energy

Finland is renowned for its success in commissioning sustainable and renewable energy sources, and is well on track to meet the ambitions of the EU's 20-20-20 goals (IEA, 2013:10). This, as mentioned in the previous chapter stems from the historically high share of the use of peat in energy production. Graph 4 above illustrates the history of the Finnish energy supply, and how between the years 1970 and 2009, the share and use

of different energy resources has changed, but the shares of oil and wood based renewable fuels have stayed rather constant.

Graph 3.4. Finnish energy supply 1970-2009

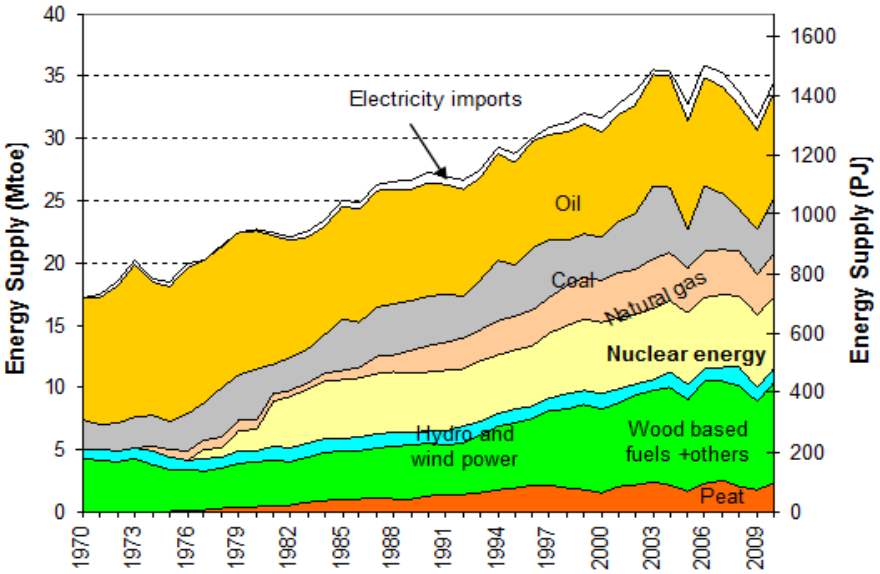


Table from IAEA report, 2012, their data from Statistics Finland.

As the second out of the two longer-term strategies adopted and prioritized by Finnish authorities, renewable energy has created a very striving renewables programme, as the aim is to increase the amount of renewable energy to 38% by the year 2020 (IEA, 2013:11). With over 80 percent of the country covered in forests, Finland has undeniably made use of the forestry in order to meet targets for renewable energy. The plans are for the forestry sector to 'contribute half of the additional 38 terawatt hours between 2005 and 2020.' (IEA, 2013:11) Indeed, the use of 'forest fuels' in the production of energy, according to Åkerman et al., had, by the year 2005, tripled in five years (2005:596).

The renewable energies that are derived from the forestry sector consist of energy from forest chip usage and various other wood-based sources, but other renewable energy methods such as wind power, heat pumps and biofuels for transport use, are also used

(IEA, 2013:11). Wind is a further renewable energy that Finland has possible great ambitions to develop, as the capabilities for wind production exists, but the actual production has remained below 1% (Enerdata, 2014:22). Indeed, Finland has 'very limited and short experience in tariffs for wind energy,' as they are in place but have not been functioning to their full extent due to various other administrative hurdles, such as land use policies (Vihma, 2014). Finnish biogas production has mostly (70%) grown out of recovery plants of landfill gas. Biogas production has remained small, but several projects have been established to increase annual production capacities of biogas (IEA, 2013:67).

3.2.3. Natural Gas

The use of natural gas in Finland is vital to the overall considerations of energy security, as natural gas is the cause of energy security concerns in Europe in the current geopolitical climate. As an energy form, natural gas has substantially lower levels of emissions, and is, as a result, viewed as a 'low carbon energy system.' (Faas et al., 2011:16) With no domestic production of natural gas, apart from a minor biogas production industry, the Finnish gas market stands isolated with no transport connections to other EU states (IEA, 2013:67). Finland imports natural gas from Russia through a single pipeline, opened in 1974 with a single entry point from Russia (IEA, 2013:12, 67; Youngs, 2009:95; Kunnas, and Myllyntaus, 2009:177). Due to the market isolation, the Finnish gas network has received a special derogation from the European Union's Gas Directive.

Gasum Oy, the Finnish natural gas monopoly, is the sole owner and operator of the pipeline network from Russia and across Finland (IEA, 2013:12). Incidentally, Gasum Oy's shareholders consist of Fortum Oyj, a Finnish energy production company who

owns 31% of Gasum, Gazprom, the Russian gas company, who owns 25%. Also, the Finnish State owns 24%, while German owned E.On Ruhrgas has 20% ownership of Gasum (IEA, 2013:69). The current agreement made with the Russian company Gazprom Export is valid until 2026, and the prices of transports are linked to 'oil, coal, and domestic energy prices.' (IEA, 2013:67) The contract between Gasum Oy and Gazprom is fairly inflexible, and negotiations are being held for a more malleable format due to the downward trends in the domestic gas usage in the past few years, but with possible higher peak demands (IEA, 2013:67).

Finland imports 4.1 billion cubic metres (bcm) of natural gas from Russia, which is 9.7% of Finnish TPES and in 2011 accounted for 12.9% of the production of electricity. Moreover, out of the 4.1 bcm; 60.6% goes to power generation, 27.4% to industry, 9.5% to energy sector, and the rest to services, residential and transport (IEA; 2013:67). This breakdown of gas demand differs in comparison to other European countries, hence making Finland a very different gas consumer to continental Europe as domestic use is only 1% as houses are not fitted with gas boilers or cookers. Instead, over 60% of gas is used in power generating and CHP plants (IEA, 2013:68). The demand for natural gas has historically risen from a 1974 demand of 0.5 bcm, to 5 bcm in 2005, and a slight decrease to 4.1 bcm in 2011. The usage of gas rises significantly during the winter months, for use in CHP and heat plants (IEA, 2013:68).

Alternative supply routes for gas have been considered planned (IEA, 2013:12) One alternative gas pipeline, the Balticconnector, would be built in order to connect Finland and Estonia, and thus connect Finland to the Baltic networks (Enerdata, 2014:21). While the amount of gas being used in Finland is slight in comparison to the various other energy sources in use, the fact that a single importer and a single import origin are

responsible for access to natural gas, the security of the energy source is questionable and the market very constrained.

3.3. Energy and Environmental Policy

Finland ranked 18th out of 178 countries in the 2014 Environmental performance Index, showing that in a global comparison Finland performs extremely well in terms of environmental measures, even if industry and per capita energy consumption are very high (EPI, 2014). Historically, Finnish environmental policy has been of a high standard since the 1980s (Sairinen, 2003:73). In the long run, decarbonizing has been taken as Finland's main environmental objective. A goal shared by the other neighbouring Nordic countries, Finland aims to decarbonize by intensifying its measures to lower consumption and the creation of cleaner means of production (IEA, 2013:10) Hence, it comes as no surprise that Finland ranked fourth-lowest in terms of the lowest shares of fossil fuels included in the energy mix, and the highest in terms of the amount of biofuels (IEA, 2010:10). In terms of environmental performance in comparison with other Nordic countries, relatively, Finland has lagged behind the other three. This, according to Salonius-Pasternak was due to the 'strong heavy industry [having] left its marks, and [continuing] to do so.' (2014)

While economic crises may usually have a negative impact on the environmental policy measures and decarbonisation attempts, the most recent economic crisis and structural changes that occurred as a result, actually influenced Finland's emissions profile positively, and since then, Finnish government has been seen to adopt means of decarbonisation – in transport, agriculture, and heating – that go well beyond emissions reductions targets set out by the European Union. Within fiscal policy, contributions have also been made as energy taxing has been renewed, with less taxation on cleaner

energy sources (IEA, 2013:10). Despite such successes in implementing and correlating between different sectors in decarbonizing society, Finland still, as mentioned previously, has one of the highest per capita rates of consumption in the world, has reliable but problematic nuclear sources of energy, and imports large amounts of energy resources from elsewhere in the world (Kara et al., 2008:194).

Since joining the EU, Finland's energy policies have become cohesive with those of the community – 'targets are aligned with the Union's … and generally comply with EU legislation' (IEA, 2013:11). In terms of energy, the EU's 2009 'third package' was adopted with the idea of securing the appropriate functioning of the energy markets, and the cross-border trade that goes along with it (IEA, 2013:11). The purpose of the third package legislation was, according to the IEA, 'ensuring the proper functioning of energy markets and enhancing cross-border trade and access to diversified sources of energy.' (2013:11)

In terms of the Finnish energy markets, the IEA states that due to the liberalization of the electricity markets and its inclusion in the competitive Nord Pool, Finland's energy market is functioning relatively well (IEA, 2013:11). However, issues arise upon considering the Finnish natural gas market, as the arrangement of the market is 'in clear contradiction with the EU vision.' (IEA, 2013:12) The EU has granted the country a 'derogation' from EU rules concerning the internal market, which state that a country should not be wholly dependent on a single importer for an entire energy source (IEA, 2013:12). Seeing as Finland's natural gas supply has a sole importer, Gasum, and comes from a sole source, Russia, the energy security of Finnish natural gas is very questionable, especially considering the current geopolitical climate.

Finland can be defined as an ‘actively inclusive state where multi-party coalition governments and expansive corporatism have ensured consensual policy orientation and a broad interest representation in official arenas of policy preparation,’ but due to the economic dependency of interest organisations, generally their influence has remained limited (Teräväinen et al., 2011:3435). Indeed, in terms of energy policy, according to Teräväinen et al., the decision-making processes are in the hands of a few, mainly the Ministry of Employment and Economy (MEE) (2011:3435). This has sparked criticism, as the MEE’s influence in energy policy has been seen as a conflict of interests (Teräväinen et al., 2011:3435).

Uskola stated that the ‘energy market has become increasingly politics-driven’ and that policy makers can be decisive in terms of planning ‘which investments will be profitable’ (2014). However, the influence goes vice versa, as according to Vihma, an influential group exists in Finnish business that is ‘making big money in Russian trade and of course they have their voice in policy.’ (2014). Moreover, Salonius-Pasternak stated that, private businesses also have great influence in the upkeep of Finnish-Russian energy relations (2014). Thus, as Finland ranks high in terms of world comparison in environmentalism, security of energy is something that should be under control.

4. ENERGY SECURITY

4.1. Theoretical frameworks of energy security

Energy security is a multifaceted concept that includes various 'concerns linking energy, economic growth and political power' (Esakova, 2012:39). Indeed, definitions of the term range 'from narrow issues of physical supply distribution to broader ones involving the economic, environmental, and political consequences of changes to energy markets.' (Drever and Stang, 2013:1) Concerns surrounding energy security have, in recent years, arisen once again due to the growing need for abundant energy resources, even despite recent economic downturns (Luft and Korin, 2009:1).

The theories surrounding energy security have mostly stemmed from political theories of strategic security studies, or international regime theory (Cherp and Jewell, 2011:3; Esakova, 2012:19). International regime theory recognises the idea of the relationships of interdependence, which can be defined as 'situations characterized by reciprocal effects among countries or among actors in different countries.' (Keohane and Nye, quoted in Esakova, 2012:19) Interdependence is a deeper concept than simply interconnectedness, as, according to Keohane and Nye, it involves the 'flows of money, goods, people, and messages across international boundaries' (quoted in Esakova, 2012:20). According to Keohane and Nye, it is indeed the 'relationships of interdependence' that occur within international regimes, which in turn are influenced by 'networks, rules, norms and procedures that regularize behaviour and control its effects.' (Esakova, 2012:25) Thus, based on the above definition, it can be argued that interdependence is the essence of energy security. Keohane's and Nye's concepts of interdependence rely heavily on realist presumptions of states being 'coherent unites and dominant actors in world politics,' with force being a 'usable and effective

instrument of policy,' while international organisations play a minor role, and military treats are more dominant goals than economic and social affairs (Esakova, 2012:48).

Hughes' concept of the 'four 'R's of energy security' includes the features review, reduce, replace, and restrict (2009:2459). Review consists of understanding the problem, by reviewing 'existing sources, suppliers, sources of energy and infrastructure,' and consists of surveying future possible energy sources (Hughes, 2009:2459). Reducing, quite simply, consists of reducing energy demand, which in turn has a positive effect on energy security as countries become less dependent on importation of energy, and it can be achieved 'through energy conservation or energy efficiency, or both.' (Hughes, 2009:2460) The third concept, replace, is essential due to the fact that the impact of reduction can be limited due to the fact that all systems need a certain level of energy to work and thus, according to Hughes, 'in addition to reducing demand, improving energy security also requires the replacement of insecure energy supplies with secure ones' (2009:2460). Finally, restrict consists of 'the intent to limit new demand to secure sources.' (Hughes, 2009:2460)

4.2. Energy security between Europe and Russia

The energy relationship between Europe and Russia is of mutual importance to both sides, and while mutually beneficial to both, it has proved problematic. Indeed, the dependence on Russian energy imports, to Europeans, is unsettling (Cohen, 2009:92). Furthermore, according to Pedersen, three main overall concerns exists when considering European dependency on Russian energy; first, the impending gas cut offs, second, non-competitive prices, and finally, rampant corruption (2014: 15). Smith suggests that there are two different European visions of Russia; firstly, Russia is

viewed as a great European power with commonalities between it and other European countries, and second, as something 'strange, alien and threatening.' (2006:7)

Historically, Russia has used its natural resources as a power tool in the former Soviet areas of Europe (Huotari, 2011:121; Högselius, 2013:91). However, the recent actions carried out by Russia have been a significant change in the EU-Russia relationship. Russia of the 1990s was perceived as weak, broken shadow of a country, while at the moment the country is framed as a powerful world power (Huotari, 2011:121). This change has been attributed to President Putin's aggressive policies and stable political system, and also the changing world energy market (Huotari, 2011:121; Esakova, 2012:19).

As a result of the uneven distribution of natural resources in Europe, many European countries have their resources transported over long distances (Arentsen, 2004:69). Indeed, 'nearly all EU members are heavily dependent on imports of fossil fuels, particularly oil and natural gas' and, thus, minimising the possibilities of supply shortfalls has become a priority to many member states (Voutilainen, 2008:124-5). The gas trade between the European Union and Russia has gained the most attention as a matter of energy security. Approximately 20% of EU gas exportation has originated from Russia in the last few decades, and for various member states the share has surpassed 90% (Le Cog and Paltseva, 2014:41).

Arentsen suggests that the establishment of a common European market is an achievable and desirable goal, seeing as there is an 'extensive cross-border flow of gas in Europe' (2004:69). However, such a market would be under vast restraints from various 'technical, political and institutional restrictions' as gas imports go outside and

within the EU (Arentsen, 2004:69). No lasting agreements have been made between these two independent partners, Russia and the EU, and the focus of the relations, according to Smith, is 'how a politicization of energy security has emerged.' (2014:77) The energy relationship between the two is indeed one where security remains a concern for both sides; on one hand, the 'security of gas supply for the EU, who wants to avoid Russian gas supply disruption,' while on the other, for Russia the concern is of 'the security of gas demand' in order to maintain a secure market share in the EU (Le Cog and Paltseva, 2014:41).

In terms of the interdependence theory, gas, as opposed to oil, is an energy source which creates a great interdependence between supplier and importer. Gas pipes are inflexible, and thus a strong interdependence exists (Esakova, 2012:20). Hence, a mutual interdependence creates the framework for mutual cooperation between the different actors involved in natural gas trading, and possibly shows why natural gas supply disruptions and conflicts are so rare.

Most agreements between Russia and various EU countries have been bilateral, despite efforts in recent years, especially after the economic crisis of 2008-9, to reverse this trend and build a more 'common normative energy agreement' (Smith, 2014:77). Indeed, the distinctive multilateral nature of the EU has proved difficult for Russia to deal with, as the country tends to prefer to conduct agreements on a bilateral basis, rather than multilateral (Smith, 2006:12; Vihma, 2014). The Russian discomfort with multilateral processes, according to Smith, stems from the idea that Russia feels uncomfortable in negotiations where it 'would be one amongst others, small and big countries alike' (2006:14).

While the realist view of energy security tends to focus on one state having more influence on another through the usage of energy dependence, this perspective cannot wholly be applied to the current relationship between the EU and Russia. This, according to Le Cog and Paltseva, is because 'there are gains from trade for the gas relationship between the EU and Russia' and 'Russia is no less dependent on the EU' (2014:41). Indeed, approximately half of Russia's profits from energy exports originate from the EU area, and the EU markets are necessary in order for Russia to 'facilitate development and growth' of its energy exportation (Le Cog and Paltseva, 2014:41). Indeed, some have gone even as far as to claim that Russia is more dependent on the EU, than the EU on Russia (Le Cog and Paltseva, 2014:41).

However, exceptions without a doubt are apparent, as is seen in the various gas-related disagreements between Russia and Ukraine. Indeed, geopolitical and economic tensions between energy partners can cause tensions (Le Cog and Paltseva, 2014:41). Events in Eastern Europe in 2006 reminded the rest of Europe that energy security should not be overlooked, as the gas dispute between Russia and Ukraine brought gas supplies to Ukraine to a halt (Youngs, 2009:24; Froggatt, 2007:178; Huotari, 2011:121; Drever and Stang, 2013:1). Ukraine's gas relations with Russia have demonstrated the vulnerability disruptions can crate, as 'the vulnerability had a variety of domestic consequences' through which 'the state was robbed of valuable resources' which further weakened a weak state and 'made it less able to get a grip on the energy system and its problems.' (Balmaceda, 2008:65) Gas transports were simultaneously thus halted to multiple countries in the rest of continental Europe, as the gas pipes run through Ukraine, which undoubtedly led to considerations of energy security across the wider context of European energy (Le Cog and Paltseva, 2014: 43). Furthermore, the events of 2006 led to calls for Europe to develop a common policy on energy policy (Froggatt, 2007: 178).

These events, according to Cohen, were examples of Russia proving 'that it is willing to hike up oil and gas prices, engage in anti-free market practices and use energy as a foreign policy tool.' (Cohen, 2009: 91)

In terms of energy interdependence, according to Esakova, 'there is a fundamental link between interdependence and cooperation in the field' which is crucial in terms of regime building, but also entails the concept of some actors being more dependent than others (Esakova, 2012:15-6). Thus, in order to develop energy security, it seems an international regime is necessary in order to have control and survey the business of energy security. The IEA has in recent years warned of various dangers in energy security. One of these is the growing influence of national energy companies becoming increasingly state controlled (Esakova, 2012:17). This is a growing concern in Russia, as the Kremlin seems to have an influence in most matters.

4.3. Current geopolitical climate and change in Russia

Some would seek to blame Russia for the major conflicts that have occurred in recent years in Eastern Europe. Furthermore, the blame is often placed on Russian President Vladimir Putin who came into power in 2000 (Nygren, 2006:125). Indeed, the changes in Russian foreign policy has been credited to the apparent change Putin made to 'very consciously and from the very outset of his first presidential term [to distance] himself from the more traditional Russian geo-political thinking,' and especially those of his predecessor Boris Yeltsin (Nygren, 2006:125-6; Lo, 2003:11). The major shift, according to Nygren, was that Putin changed the Russian foreign policy from having a 'geo-political' focus, to policies focused more on 'geo-economic' interests (2006:127).

As mentioned in previous sections, Russia finds it difficult to deal with multilateral entities such as the EU where negotiations place Russia amongst other smaller countries (Smith, 2006:14). This, according to Smith, has become 'increasingly evident in Russia-EU relations, especially during Putin's second presidency.' (2006:14). Indeed, to this day, Russia seems influenced by its past, despite seemingly understanding the concept and importance of international organisations and multilateralism (Smith, 2006:14). The change in Russia during Putin's presidency has manifested itself in such a way that Russia has evolved into a 'state-centred one-party system with strong autocratic tendencies' and control over political, economic and societal spheres, from being a 'pluralist state in flux' (Smith, 2006:16-7). Therefore, concerns have been raised about the weakening of democracy in Russia. Most recently, Russia's involvement in Ukraine has raised international discussions surrounding the single-party rule state led by President Putin.

As a result of military involvement in Ukrainian civil unrest since February of 2014, and especially since the shooting down of a Malaysian Airlines flight MH17 as a result of, most likely Russian-provided arms and Russian-backed separatists, the US and the EU announced various punitive sanctions on Russia (The Economist, 2014). In return, Putin has ordered retaliatory sanctions on various imports from the countries that imposed the original sanctions on Russia (BBC, 2014). This, according to the Economist, signals the end of 'a 25-year-long quest to make Moscow a partner of the West.' (The Economist, 2014) Indeed, relations between the East and West have soured in recent months, and there is cause for concern, as the West has tended to remain 'reluctant to criticise Russia as not to upset the Russians, for a number of reasons.' (Smith, 2006:18) In terms of energy security, the effects of these sanctions on energy transports remain, at the time of writing, uncertain, but it is safe to say that if the

relations between Russia and the EU degenerate further, there is serious cause for concern.

4.4. Finnish energy security

In terms of the events of recent months in Eastern Europe, Finland has had to consider how it may have to deal with some of the consequences. The geographical location of Finland, as stated previously, places Finland as the only non-former Soviet European country to share a long border with Russia. This, combined with a history of dominance, economic ties, and special relationships, has led to considerations of Finland's position in Europe, and whether it is in Europe or between Russia and Europe.

The lack of indigenous hydrocarbon energy resources indicates that energy policies and securing energy resources becomes an imperative policy concern for Finnish policymakers (IEA, 2013:9). In order to secure energy resources, the Finnish government has taken various steps; firstly, by creating emergency reserves, and secondly, by diversifying the energy mixture. Indeed, emergency response capabilities are outlined in the 1992 Act on Security of Supply, which states that the country must 'hold alternative fuel for oil and gas disruptions that march at least five months of consumption.' (IEA, 2013:9) The IEA stockholding requirement standard is to have emergency reserves for 90 days, so Finland has practically doubled that requirement. Furthermore, in order to diversify, Finland has created an electricity production mix where renewable, nuclear and hydrocarbon energies are all used (IEA, 2013:9). Indeed, by creating an electricity framework by integrating into the Nordic electricity market, Finland has consolidated its energy resilience in this respect (IEA, 2013:9). However, a weakness in Finnish natural gas sourcing security presents itself in the lack of a large-scale storage capacity, as all storage facilities are over-ground pipelines or 'spherical

storage for daily balancing and peak shaving' (IEA, 2013:72). Thus, according to the IEA, the fact that Latvia has significant natural gas storage facilities, the LNG terminal through Estonia would allow access to these vast gas resources in Latvia (2013:72).

The IEA states that a further manner, in which a country may avoid dependence on energy importation, is to reduce the domestic need for energy (2013:9). Finland has, according to the IEA, been 'resourceful in initiating and implementing significant energy efficiency programmes' as the 2009 Climate and Energy Strategy set out a goal that would reverse the growth in energy consumption, with an 11% decrease by the year 2020 (2013:9)

Seeing as due to the cold climate and dark winters, a major share of Finland's energy consumption goes to the lighting and heating of buildings. Efforts have been plentiful to decrease energy consumption; building codes have been updated for future builds, and the current housing stock has had subsidies put in place to improve the energy efficiency of buildings, with future plans being made for the transport sector which remains 'highly oil-dependent.' (IEA, 2013:10) Indeed, by developing the transport sector, Finland would be able to decrease the need for imported fossil fuels. Furthermore, in regards to the heating and lighting of houses, Finland has, due to the immense need for energy consumption in this sector, created 'the world's most extensive and efficient combined heat and power (CHP) industries and district heating networks,' which has turned this these 'vulnerabilities into strengths' (IEA, 2013:10). Indeed, CHP has come to account for approximately half of the heating production, and a third of electricity production, which is above the 10% EU average (IEA, 2013:10; Kara et al., 2008:194) Furthermore, the lack of fossil fuels has resulted in Finnish innovativeness in producing energy from the indigenous hydrocarbon resources that are

available in Finland, namely peat. Peat, as shown in Graph 2, accounts for ~6% of total energy consumption and is a rare form of energy supply, with a negative environmental impact due to its high levels of carbon-intensity, but it does provide heat for around a million homes (IEA, 2013:10).

As mentioned previously, in order to diversify gas supplies to Finland to end isolation and derogations in the Eastern Baltic Sea Region, plans are under consideration and in progress for the Balticconnector between Estonia and Finland under the Baltic Energy Market Interconnection Plan (IEA, 2013:71). The LNG terminal is estimated to be at full working capacity by the end of the year 2018 (IEA, 2013:72). However, issues have arisen concerning the timetabling of the construction, as EU bureaucracy has complicated the process (Salonius-Pasternak, 2014). This terminal and crucial connection to mainland European gas will indeed increase Finnish energy security, as no longer will the country be dependent on one sole source of natural gas.

What also becomes apparent for Finnish companies, or any companies in general, when investing abroad is the fact that for determining the location of new investments, security risk assessment is key. However, in terms of Finnish companies investing in geopolitically threatening Russia, according to Uskola, 'security evaluations are done on a continuous basis, not based on specific events' and that Fortum Oyj, is 'monitoring the developments in Russia, and change [their] policies as needed.' (2014)

Thus, the increase in investment in the nuclear industry has been used by Finnish policy makers as the guarantee for securing of domestic energy supply, which in turn would decrease the need for a reliance on energy importation, while meeting the European climate change commitments (Mitchell and Woodman, 2007:163). Indeed, traditional concerns for the risks caused by nuclear energy, such as accidents and radiation risks,

have been pushed aside, and instead is portrayed as a solution to energy security and climate change (Teräväinen et al., 2011:3434).

While Finland may not be in a similar situation as Ukraine or other eastern European countries, the risks in dealing with Russia in energy trade are ever present. This, however, is not to be exaggerated, as no disturbances have occurred between Finland and Russia in energy trading. During the last two decades of gas imports to Finland via the pipeline from Russia, only one disruption has occurred. The disruption lasted a day in the summer of 2007, and was due to a pipeline accident near St Petersburg (IEA, 2013:71). However, Finland does retain special relations with Russia as a result of the long history of cooperation, and Finnish policies on all international levels always consider Russia.

5. DISCUSSION AND CONCLUSION

5.1. Discussion

The current geopolitical climate has forced discussions of energy security within Europe. Indeed, issues stemming from disputes between Russia and Ukraine from the year 2006 have arisen to the surface, as disturbances between the two countries began in early 2014 once more, as Russia aimed to support the separatist militants that are seeking independence for parts of Ukraine. The 2006 disturbances highlighted the risks of dependence, and especially the risks in relying on few energy suppliers (Bahgat, 2006:961).

The sanctions that the USA and the EU are placing on Russia currently are in response to Russia's actions in Ukraine have caused much discussion in Finnish media concerning their effect on Finland (YLE, 2014b). The Finnish Centre Party has expressed concerns, that while the sanctions do not directly have links to Finland, they could have 'major consequences' on the Finnish economy due to the fact that according to analysis carried out by the European Union, the Russian economy will weaken by five percent (YLE, 2014b). Indeed, the chair of the Centre Party has warned Finnish foreign policy makers from underestimating the influence that a shrinking of the Russian economy will have on Finland (YLE, 2014b). Furthermore, the retaliatory sanctions placed by Russia on food imports will affect Finland gravely, as, for example, dairy producers expect for exports to decrease to a fifth of previous year's levels (YLE, 2014a). Thus, while sanctions are not concerned with energy as of now, it remains unclear how far the situation will escalate, and what sections will be affected in the coming months.

Therefore, the fact that sanctions imposed on Russia due to Russia's political, economic, and military actions in another European country, may have an influence on Finland has led to increasing re-evaluations of concepts further than energy security, in terms of national security. Indeed, Finland's lack of NATO membership has come under new consideration in recent months, as President Sauli Niinistö stated that 'an overall [security] assessment, including the NATO option, should be made.' (YLE, 2014b) Indeed, recent polls show an increase in the number of Finns who are in favour of joining NATO, and simultaneously who view Russia as a threat (Hanhivaara, 2014).

As has been stated, Finland relies on other countries for various fossil fuels necessary for energy production and the functioning of industry. The extent to which Finland's energy security is endangered by a dependence on Russia is split into two schools of thought; first, those who feel Finland is wrapped around Russia's little finger politically and economically, and second, those who feel Finland is strong enough to stand up to Russian threats.

Luukkanen's term 'in Russia's pocket' aptly describes one school of thought in considering Finno-Russian relations. While admittedly a shocking term, it, according to Luukkanen, describes these post-independence relations well, as first Finland lived as neighbours with 'the bear', after which in its teeth, and since 1944 in 'its pocket' (2010:11). Finland, while not considered a post-communist country due to a policy of nonalignment does, at times, seem to spiritually lie in Russia's pocket (Luukkanen, 2010:11-2). Indeed, the relations between the two countries have never been purely political, but have always included strong economic ties, as Russian corporations have had great interests in owning Finnish infrastructure, and Finnish companies have made investments in Russian energy corporations in return (Luukkanen, 2010:112; Salonius-

Pasternak, 2014) Thus, some state that 'energy guzzler' Finland lives on 'Mother-Russia's' electricity, gas and coal, and that production of energy grovels under Russia's good will (Luukkanen, 2010:132). Therefore, it can be stated that the Finnish government's decision to maintain and increase nuclear power reserves has been used as a tool for creating self-sufficiency, if Russia decides to put 'Finland on her knees with energy.' (Luukkanen, 2010:133) Furthermore, natural gas is taxed with higher tariffs than other energy means, which also speaks of 'secret motivations' to create energy independence (Luukkanen, 2010:138).

However on the other hand, in order to discuss Finnish energy security from a positive analytical perspective, Hughes' four R's of energy security – review, reduce, replace, and restrict – can be utilized to show that although some risks are involved, Finland is not the country most at risk in Europe. Finnish authorities have indeed reviewed the problem of energy security, as future possible energy sources have been considered, and are already being pursued as is showcased by the Balticconnector LNG terminals which will allow Finland to be connected to continental European gas pipes. Seeing as the natural resources that Finland exports from various countries, but mostly Russia, are not indigenous to Finland, and are, what some would consider an energy security risk because they render Finland dependent on imports, the idea of diversifying the origins of these resource has been suggested. In diversifying the sources of energy supplies, while security of supply has' not been an issue' for Finland, and is 'unlikely to become an issue excluding significant escalation in geopolitical conditions', further 'diversification would mean further de-risking' of even the slightest risks involved (Uskola, 2014). Indeed, Finland, like much of Europe, should, due to issues with energy security as of late, consider new energy options by means of alternative fuels and new transport routes (Le Cog and Paltseva, 2014:56). Indeed, according to Vihma, 'from a

capitalism point of view it would be good to have competition' because in countries where gas prices are in competition, lower prices and better contracts are found (2014).

The reduction of energy consumption is also well under way in Finland as the country is well on the path of outperforming the EU's 20-20-20 emissions reductions goals, and the use of renewable energy forms is much higher than the EU average. In terms of environmentalism, natural gas is an ecologically friendlier option in comparison to domestic peat. Hence, Luukkanen's argument that if Finland is to be more environmentally friendly, the sensible option is to continue the dependence on Russian imports of natural gas, while more ecological energies, such as wind power, received the attention they deserve from policymakers, is understandable (2010:139). Nowadays, with scarcity of sources no longer the primary concern, worries have shifted to the continuous copiousness. Thus, the issue of energy security versus that of environmental sustainability arises, as it becomes difficult to reduce emissions when consumption continues rising.

The replacement of energy methods is where Finland may try to do better. Indeed, the lack of fossil fuel resources has been fixed by means of imports and a large reliance on nuclear power. Finland's eagerness to expand on nuclear reflects the similar eagerness to cut down on the level of carbon dioxide, as this is seen as the way forward in decarbonizing the energy production and usage. Indeed, the nuclear lobby argues that in order to tackle climate change, nuclear power can be part of the solution as no carbon dioxide, the main component of climate change, is created, unlike with coal and gas fired powers plants (Elliot, 2007:1) Nuclear power has, on a global scale, 'fallen from favour' due to its 'high costs, and concerns about plant safety and radioactive waste disposal,' and also security issues (Elliot, 2007:1). However, while strictly speaking

nuclear power is a carbon free energy source, it does not come without its own downsides; toxic waste material. This seems very problematic. Waste, that is radioactive, and must 'remain sequestered for a few hundred years in specially engineered subsurface facilities,' does not strike as representing an energy type that is environmentally friendly, and thus sustainable (Macfarlane, 2011:30).

While technically sustainable, when a dangerously toxic material is created in the process, it seems that the Finnish government, if wanting indeed to make the energy market in Finland more environmentally friendly, should, instead of investing in further nuclear power plants, invest in even more sustainable energy sources. Granted this is being done already, but there is always room for improvement. Indeed, renewable energy enthusiasts have argued that renewables could, by the year 2050, provide 50% of the total energy requirements of the whole world, while currently nuclear is only able to provide 7% (Elliot, 2007:2). The general trend amongst the most thriving of European countries has been to phase out of a reliance on nuclear power for energy production (Froggatt, 2007:172). Finland, however, stands with France as an exception to this trend, both with active construction programmes (Froggatt, 2007:174). Thus, Finland and France can be viewed as '[vanguards] of the nuclear renaissance.' (Nuttall, 2007:230)

The problems with Finland's strive towards further nuclear power represents itself not only as an environmentally risky, possibly catastrophic option, but also in terms of national safety. Finnish MEP Heidi Hautala has expressed her concern over the planned joint Finno-Russian venture of the Pyhäjoki nuclear plant, as in reference to Russia's role in the Ukrainian crisis that is ongoing, construction cannot be allowed to 'go forward "as if nothing had happened"' (YLE Lappi, 2014). It can be said that Finland's

energy market and the fact that nuclear power is increasingly viewed as favourable, is in reality caused by a lack of a 'critical public sphere independent of the actively inclusive state' which has a 'consensus-seeking nature of corporatist negotiations' (Teräväinen et al., 2011: 3441). It is not possible to view nuclear power as a fully sustainable energy source, and indeed, arguably, 'all large-scale energy sources currently fail to achieve sustainability in some way or another' (Nuttall, 2007: 221). Finally, in terms of restriction**,** Finland is not one to gamble its energy security. Hence, even though Russia has as of late acted towards Ukraine as an unreliable and hostile neighbour, the relationship between Russia and Finland is essentially different and much more mutually beneficial, and as a result more secure.

Indeed, upon considering the Finland of today as an EU member, the claims made by Luukkanen may seem vaguely outlandish. Indeed, when Europe has been affected by transportation cuts, most of the effects have been felt by the former Soviet countries in Eastern Europe (Uskola, 2014). Finland's membership in the European Union has, without a doubt, greatly increased the energy security of the country. Indeed, while EU countries work cohesively, 'action on the EU level can help governments achieve national objectives.' (Voutilainen, 2008:132) Indeed, the economies of the EU today have become thoroughly interlinked and thus cooperation is essential (Faas et al., 2011:9). The European Council has indeed stated that 'energy security and interconnection have become basic elements of European solidarity.' (Voutilainen, 2008:132) Therefore, Finland would aim to actively support EU initiatives, as the country's strategy of 'realistic pragmatism' consists of conflict avoidance by finding compromises (Sairinen and Lindholm, 2005:60).

Certain Finnish energy companies have made their stake in international energy markets. Fortum Oyj has become a leading Baltic petroleum company, with also 'stakes in oil and gas fields in Norway,' and Oman, and in terms of electricity Fortum has pursued various Northern European markets (Finon et al., 2004: 327-8). International trade relations such as these are central for the Finnish economy and politics. Indeed, when geopolitical events affect trade partners, the economy may suffer as a result. Uskola commented on such circumstances in terms of Russo-Finnish trade, and how trade relations have become an important driver of politics; 'in the start of the Ukraine crisis, Finnish stock-listed companies with exposure to [the] Russian market were hit hard. It is an indirect signal on [the] importance of the Russian market to the Finnish economy' (Uskola, 2014). Hence, the interlinked nature of the Finnish and Russian energy relations and trade can lead to questions of whether current geopolitical events may influence Finnish energy security and economy on a greater level.

Using energy as a 'political weapon' is a concept discussed by both Russian and Western publications (Khrushcheva, 2012:155). It has been argued that the term 'energy weapon' is too extreme, and that it should not be used to describe EU-Russian energy relations. However, Salonius-Pasternak agrees that the usage of the term energy weapon is necessary when discussing the act of '[gaining] political and economic benefits, much like one uses military weapons.' (2014). Moreover, according to Vihma, while gas can be used as a political tool, in the case of Finland it would be 'pretty ineffective' since Finland does not rely on it so much within the primary energy mix (2014).

Uskola referred to a saying that 'oil is about wallet, gas is about power' (2014). This rings true in terms of, especially, the Russo-Ukrainian natural gas relations. However in terms of Finland Uskola does 'not see Russia cutting gas supply to Finland, bar massive

geopolitical conflicts,' seeing as he feels that 'cutting gas supply would be a very blunt and irreversible political weapon.' (2014) Salonius-Pasternak agreed, as he stated that if such an instance would ever occur, it would be a 'run up to military action or something as serious.' (2014) Russia, however, is always viewed on a geopolitical level as an unpredictable player. Indeed, to Russia, energy security is all about Russian national welfare, as energy security is viewed as a 'guaranteed protection of the country, its citizens,' and the state (Esakova, 2012:43). Hence, it is challenging to predict what Russia will do next.

5.2. Conclusion

In conclusion, energy has become an indispensable resource to the way of life humans have become accustomed to. Thus, the assurance of energy resources has become crucial to each country, and has, as a result of geopolitical instabilities become securitized. Finland lacks domestic sources of fossil fuel energy, and as a result, has to import substantial amounts of petrol, natural gas, and other energy sources, such as uranium for nuclear power. Hence, Finland has created for herself a dependency on the import sources and an issue of energy security. Furthermore, as a result of a lack of indigenous fossil fuels resources, Finland has come to rely on vast amounts of growing nuclear power in order to produce enough energy for rising consumption and the carbon intensive industry. Moreover, the incessant desire of the majority of the Finnish government to continue the growth of the nuclear sector makes the security decarbonizing goals questionable, and begs the question whether the reliance on nuclear power has been so widely propagated by Finnish policy makers in order to create energy security for Finland, instead of creating more dependence on Russian imports by increasing the amount of energy resources imported.

Indeed, it makes little sense that one environmental problem - climate change - is being solved by creating another, in the form of possible pollution from radioactive materials. In comparison, nuclear plants use uranium as fuel while creating waste that is very long living and dangerous, while renewables require no fuel to power the energy production, and create no waste. This resonates for considerations of hypothetical future scenarios – hypothetical only because the timeline is uncertain – of when resources such as uranium will be fully exhausted, and the switch to renewables will have to happen in order to provide energy for consumers who, so far, have proved unwilling to curb energy consumption.

Furthermore, in terms of energy security considerations, the hypotheticals surrounding whether or not Russia would ever stop supplies of natural gas remain unanswered. The Finnish natural gas situation stands in opposition to commonly agreed EU standards, as through a single pipeline and a single transport company, 100% of Finland's gas resources are transported from Russia. However, the share of natural gas usage in the larger energy mix is fairly minimal, but for example if gas transports were disrupted in winter months, heating homes may prove difficult once backup supplies run out.

However, the usage of gas in Finland is decreasing and admittedly, the importance of energy security and gas dependency can be over exaggerated when considering Russian and Finnish relations. The geopolitical aspect of Russian behaviour is often highlighted, to the extent that the energy and foreign policies deriving from that are forgotten, and critics tend to 'assume that everything the Kremlin does is geopolitically motivated.' (Huotari, 2011:122) Indeed, these critics underestimate Russian considerations of trade, and how important 'commercial considerations' are in Russian decision making (Huotari, 2011:122). Russia has not jeopardised its commercial

relations with Nordic or West European countries by threatening them with transport disruptions.

Further research into the topic of Finnish energy security and energy dependence on Russia would benefit from a more in-depth approach to the policies involved in gas relations, and also further inspections into the various other energy types in use, as these were not possible in the boundaries of this dissertation.

To conclude, Finland's energy security is not, at the time of writing, endangered by Russian geopolitical actions of recent months. However, the effects and extent of these geopolitical disturbances are as of yet unknown, and thus energy security must remain a priority for Finnish policymakers, as should the advancement of more sustainable forms of energy instead of nuclear and CO^2 fossil fuel formats. The goal should indeed be to increase the efficiency of energy in order to make the best out of the renewable energy sources at hand, and to stop frivolous energy consumption, instead of creating further hazardous nuclear power plants, or a reliance on unstable countries for energy imports.

Appendices

Appendix I. Interview consent form

Interview Consent Form

Research project topic: Finnish dependency on Russian energy imports, the current geopolitical situation (Ukraine and Russia) and how that might affect the historical, economic, and political ties between Finland and Russia, and whether or not Finland should aim for self-sufficiency through more sustainable energy methods

Research investigator: Sanna Mattila

Research Participants name: _____

The interview will take approximately 15 minutes, possibly longer. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the interview or withdraw from the research at any time.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from UK institutions require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore read the accompanying **information sheet** and then sign this form to certify that you approve the following:

- the interview will be recorded and a transcript will be produced, upon request
- you will be sent the transcript and given the opportunity to correct any factual errors
- the transcript of the interview will be analysed by Sanna Mattila as research investigator
- access to the interview transcript will be limited to Sanna Mattila and academic colleagues and researchers with whom she might collaborate as part of the research process
- the actual recording will be kept for the duration of the study
- any variation of the conditions above will only occur with your further explicit approval

Quotation Agreement

I also understand that my words may be quoted directly. With regards to being quoted, please tick next to any of the statements that you agree with:

	I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation.
	I agree to be quoted directly.
	I agree that the researchers may publish documents that contain quotations by me.

By signing this form I agree that;

1. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;
2. The transcribed interview or extracts from it may be used as described above;

3. I have read the Information sheet;

4. I don't expect to receive any benefit or payment for my participation;
5. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any arguments made;
6. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

_____
Printed Name

_____ _____
Participants Signature Date

_____ _____
Researchers Signature Date

Contact Information

This research has been reviewed and approved by the Edinburgh University Research Ethics Board. If you have any further questions or concerns about this study, please contact:

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Appendix II. Interview questions

Politics / *Politiikka*

1. How strongly would you feel domestic politics influences the energy market, or is it more business orientated, as in energy companies decide in which countries to invest in terms of energy?
2. Finland as a Nordic country – Finland lingers behind other Nordic countries in terms of environmental policies/policy output, why would you say that is? (Because of special circumstances of being between Europe and Russia? Young democracy?)
3. How big of a role do you think private businesses have in the upkeep of relations between Finland and Russia? (new report according to YLE states Russia no longer Finland's largest export partner, EXCEPT in energy commodities)

Foreign policy / *Ulkopolitiikka*

4. Did joining the EU change Finnish foreign relations policies?
5. Since joining the EU, do you feel Finland has strictly followed the so-called EU foreign policy in terms of Russia, or has she had to have her own policies due to historical and proximity reasons?
6. Do you think Russia would ever "turn off" the tap to Finland? (Seeing as it has to Ukraine multiple times)
7. Russian Foreign Minister Lavrov warned Finland from 'playing around' with the idea of NATO, if Finland joined, how do you think Russia would react?
8. According to Veli-Pekka Tynkkynen, researcher at Helsinki University, 'energy weapon' is too strong of a term to describe how Russia has used energy as a foreign policy tool, would you agree? (in terms of the EU, been used as a soft tool where through pricing and different contracts the EU had in a way been softened to compromise)

Security (energy as security policy) / *Turvallisuus (energia turvallisuuspolitiikkana)*

9. Does Finland lacking domestic sources of fossil energy and having to import substantial amounts of petrol, natural gas, and other energy sources (uranium for nuclear power) endanger her national security?
10. Finland's gas market arrangements stand in contradiction with EU vision (constrained by undiversified import source – one pipeline entry point from Russia, one importer Gasum, both owns and operates the network) – should the plans for the new gas terminal that would bypass Russian gas thus be rushed because of current geopolitical circumstances?

Environment & sustainability / *Ympäristoasiat*

11. Should Finland seek to fully transfer gas/coal/oil imports elsewhere?
12. Finnish CO^2 emissions rose by 14.5% between 1990-2004, while rest of Europe's average was -0.6% - could this be the decrease of Russian influence on Finland as a result of the fall of the Soviet Union and Finland joining the EU?
13. How do you think the EU performs as a platform for environmental policy, and how have Finnish interests been represented in EU negotiations?
14. Seeing as Finland is indeed poorly endowed with indigenous hydrocarbon energy resources, while also having energy intensive industries and a cold climate do you feel that, Finland should invest in more sustainable energy possibilities regardless of the current geopolitical situation?
15. Do you feel that Finland having, comparatively, so much nuclear power is a result of a 'fear' and lack of trust of Russian energy imports?

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